**Pre-AP BIOLOGY - Cell Structure and Function Test**

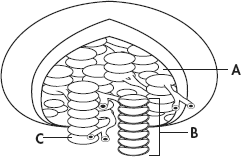
**Modified True/False (10 points)**

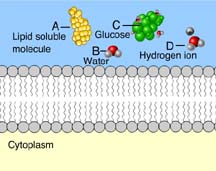
*Indicate whether the sentence is true or false. If false, change the identified word or phrase to make the sentence or statement true.*

1. \_\_\_\_\_\_\_\_\_\_When using a microscope you should always start on low power. **T or F**
2. \_\_\_\_\_\_\_\_\_\_Stacks of thylakoid disks are called chlorophyll. **T or F**
3. \_\_\_\_\_\_\_\_\_\_The cell membrane is the organelle that maintains a plant cells shape. **T or F**
4. \_\_\_\_\_\_\_\_\_\_Humans are an example of organisms that are eukaryotic. **T or F**
5. \_\_\_\_\_\_\_\_\_\_The Golgi apparatus is in charge of delivering proteins. **T or F**
6. \_\_\_\_\_\_\_\_\_\_The reactants of photosynthesis are oxygen, water and glucose. **T or F**
7. \_\_\_\_\_\_\_\_\_\_The matrix of the mitochondria contains enzymes and DNA. **T or F**
8. \_\_\_\_\_\_\_\_\_\_The tails of phospholipid molecules are hydrophilic. **T or F**
9. \_\_\_\_\_\_\_\_\_\_Both chloroplasts and mitochondria are able to reproduce independently. **T of F**
10. \_\_\_\_\_\_\_\_\_\_A hypertonic environment is when the outside environment has a lower concentration of water than the inside of a cell. **T or F**

**Multiple Choice (24 points)**

1. The work of Schleiden and Schwann led to…
   1. knowing that all plants are made of cells.
   2. understanding all animals are made of cells.
   3. the writing of the modern cell theory
   4. knowing that all plants and animals are made of similar cells.

1. Which organelle converts food into compounds that the cell uses for growth, development, and movement?
   1. Chloroplast b. golgi apparatus c. ER d. mitochondria
2. Which of the following is not the job of the cell membrane?
   1. Provide nutrients c. regulate transport
   2. Protection d. provide anchoring sites
3. Cell bursting or rupturing is associated with a \_\_\_\_\_\_\_\_ environment.
   1. Cancers b. hypertonic c. hypotonic d. bacteria
4. Active transport uses energy (ATP) to move substances…
   1. against the flow c. by diffusion
   2. against the concentration gradient d. into the nucleus
5. What aspect of the cell membrane assists with cell shape and phase shift control
   1. Phospholipid c. cholesterol
   2. Amphipathic d. transmembrane proteins
6. Making strawberry kool-aid shows what type of transport?
   1. Simple diffusion b. active c. mediated d. facilitated
7. The rate of diffusion in a system could be increased by
   1. increasing the concentration gradient and decreasing the size of the molecules
   2. decreasing the concentration gradient and increasing the size of the molecules
   3. increasing the concentration gradient and increasing the size of the molecules
   4. decreasing the concentration gradient and decreasing the size of the molecules
8. Which of the following is not a necessary cell function?
   1. Must be able to take in substances
   2. Must be able to repair and grow
   3. Must be able to move
   4. Must be able to deliver hormones to vital areas
9.  Using the figure to the right what is the name of the structure labeled **B**?
   1. Granum b. thylakoid   
      c. chlorophyll d. stroma
10. Which structure in figure to the right represents a single thylakoid?
    1. structure A c. structure C
    2. structure B d. structure D
11. Which of these cannot pass directly through the phospholipids of the plasma membrane?



* 1. A
  2. B
  3. C
  4. D
  5. B,C,D

**Vocabulary (13 points)**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the photosynthetic chemical in plants
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ purpose of lysosomes
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ thought sperm were little people “Crazy!”
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ an environment that is balanced (not homeostasis)
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells that lack a true nucleus
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mini-organs
7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ father of “The Cell Theory”
8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a plants **shape** is dictated by this organelle
9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a form of diffusion that moves large molecules without ATP
10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ proteins that do not extend fully across a cell membrane
11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a cell membrane that only lets certain molecules pass through is said to be
12. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ what tool was integral in the understanding of the cell

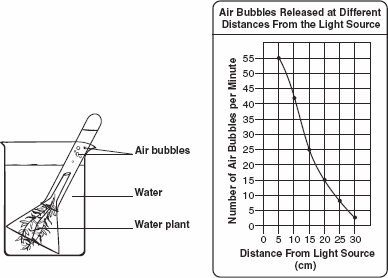
**Application Question (8 points)**

1. A 0.9% NaCl solution is isotonic to red blood cells. Describe the results if blood cells are placed in a 9% solution of NaCl?
2. A small lipid molecule passes easily through the cell membrane. Write a sentence that best describes why this is possible.
3. If you have kidney failure, you might have to have a medical procedure called kidney dialysis. Blood from your body is run through dialysis tubing in a machine and then returned to you. The dialysis tubing is covered in liquid called dialysis fluid. If your kidneys are not working, a toxic compound called urea builds up in your blood. In order to get rid of the urea in your blood, how much urea should the dialysis fluid have in it and why?
4. Explain what the phrase “dynamic equilibrium” means.

*Dynamic - Characterized by continuous change, activity, or progress*

**Short Answer…Choose ONLY two to answer (10 points)**

1. What makes studying photosynthesis a desirable goal for scientists? Support your answer with some factual information.(5 points)
2. **Explain why** the cell membrane is built the way it is? *This is not a function question it is a structure question*(5 points) BE DETAILED IN YOUR EXPLANATION!!!
3. Describe the three different environments that create movement of molecules in and out of our cells? EXPLAIN each way in one or two sentences. (5 points)
4. Today’s most recent understanding of the cell membrane has been described as the “Fluid Mosaic Model”. Explain the models name. (5 points)
5. Construct and argument for and against the use of *Aicar* and include what role *Aicar* plays into cellular activity. (5 points)

**Essay (10 points)**

A student prepared two beakers with identical sprigs of a water plant as shown below. She placed one beaker in the shade and the other beaker beside a fluorescent lamp. She then systematically changed the distance from the beaker to the lamp. She counted the bubbles given off by the plants in each beaker. Shown here is the graph of

the data for the beaker she placed beside the lamp.

**Label your answers to these questions in the space provided below.**

1. In the experiment described above, which beaker is the student’s control?
2. If the student later tested the bubbles collected in the test tube, what would she find they are made of?
3. What distance from the light source was the greatest number of bubbles produced?
4. Look at the graph and describe what does the student’s data show?
5. Where is the gas being produced?

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